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CIBA SPECIALTY CHEMICALS CORPORATION
PATENT DEPARTMENT
540 WHITE PLAINS RD
P O BOX 2005
TARRYTOWN, NY 10591-9005

EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	**PAPER NUMBER**
1714	5

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MK-5

Office Action Summary	Application No. 09/869,549	Applicant(s) AUSCHRA ET AL.	
	Examiner Callie E. Shosho	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,17 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 8 recites the limitation "the chinophthalon pigment" and "the polycyclic pigment group" in line 4. There is insufficient antecedent basis for these limitations in the claim.

(b) Claim 8 recites an improper Markush group. It is suggested that in line 4, after "pigment" and before "the", "and" is deleted and replaced with a comma.

(c) Claim 8 , line 8 recites that the organic pigment particles are "pigments". The scope of the claim is confusing because it is not clear what is meant by the pigments are selected from

pigments. What type of pigments does this phrase encompass? How are they different from the other specific pigments recited in the claim?

(d) A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 8 recites the broad recitation anthraquinone, and the claim also recites "such as aminoanthraquinone and hydroxyanthraquinone" which is the narrower statement of the range/limitation.

(e) Claim 9 recites that the inorganic pigment particles include those listed as well as "modifications" thereof. The scope of the claim is confusing because it is not clear what is meant by "modifications". How must the pigment be modified? What types of modifications are encompassed by this phrase? Clarification is requested.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 7-9, and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Barkac et al. '433 (U.S. 6,268,433).

Barkac et al. '433 disclose composition comprising (i) 0.5-99.5% epoxy functional block copolymer prepared by atom transfer radical polymerization (ATRP) initiated in the presence of initiator having at least one radically transferable group such as phenylethyl halide, benzyl chloride, and toluenesulfonyl halide and catalyst wherein the polymer contains at least one of the following polymer chain structures:

$$\Phi - [(M)_p\text{-}(G)_q]_x - T \quad \text{or} \quad \Phi - [(G)_p\text{-}(M)_q]_x - T$$

wherein Φ is the residue from the initiator, M is obtained from monomer such as alkyl (meth)acrylates, G is obtained from monomer such as glycidyl (meth)acrylates, and T is derived from the radically transferable group and is typically halogen which is subsequently removed

and replaced with different group and (ii) 0.1-70% pigment including organic and inorganic pigments such as quinacridone, anthraquinone, and carbon black. The composition is in the form of powder and can be slurried in liquid medium such as water (col.2, line 62-col.3, line 15, col.3, lines 32-35 and 48-60, col.4, lines 5-12, 15-18, 32-36, and 42-45, col.8, line 61-col.9, line 16, col.9, lines 55-60, col.10, lines 55-56, col.11, lines 28-40, col.15, lines 52-65, col.16, lines 39-41, and col.24, line 44-col.25, line 6).

In light of the above, it is clear that Barkac et al. '433 anticipate the present claims.

6. Claims 1-2, 5-9, and 12-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Barkac et al. '391 (U.S. 6,391,391).

Barkac et al. '391 disclose composition comprising (i) 50-98% polycarboxylic acid functional block copolymer prepared by atom transfer radical polymerization (ATRP) initiated in the presence of initiator having at least one radically transferable group such as phenylethyl halide, benzyl chloride, and toluenesulfonyl halide and catalyst wherein the polymer contains at least one of the following polymer chain structures:

$$-[(M)_p-(G)_q]_x- \text{ or } -[(G)_p-(M)_q]_x-$$

wherein M is obtained from monomer such as alkyl (meth)acrylates and G is obtained from monomers such as hydroxyalkyl (meth)acrylates, maleic anhydride, and acrylonitrile and (ii) 0.1-70% pigment including organic and inorganic pigments such as quinacridone, anthraquinone, and carbon black. The composition is in the form of powder and can be slurried in liquid medium

such as water. The polymers contain polymer chain end group, obtained from the initiator, which is typically halogen that is subsequently removed and replaced with different group (col.2, line 65-col.3, line 21, col.3, lines 54-65, col.4, lines 10-23, 39-43, and 49-53, col.8, lines 55-64, col.9, lines 32-47, col.10, lines 26, 42-45, 50-53, and 66, col.12, lines 8-10 and 56-65, col.14, line 57-col.15, line 4, col.17, lines 48-58, and col.18, lines 33-35).

In light of the above, it is clear that Barkac et al. '391 anticipate the present claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barkac et al. '391 (U.S. 6,391,391).

The disclosure with respect to Barkac et al. '391 in paragraph 6 above is incorporated here by reference.

The difference between Barkac et al. '391 and the present claimed invention is the requirement in the claims of the difference in the amount of functional groups between the two blocks of the copolymer.

Barkac et al. '391 disclose polycarboxylic acid functional block copolymer prepared from monomers M and G wherein M includes (meth)acrylates and G includes hydroxyalkyl (meth)acrylate. Thus, the two blocks obtained from these monomers will clearly possess different amounts of functional groups given that the M monomers contain little if any functional groups while the G monomers necessarily possess certain amount of functional monomers.

Although there is no explicit disclosure of the amount of functional monomers in each block, given that the functional groups disclosed by Barkac et al. '391, i.e. hydroxyl groups, would effect the properties of the polymer such as water-solubility, it therefore would have been obvious to one of ordinary skill in the art to choose amounts of functional monomers present,

including those presently claimed, in order to control the properties of the polymer, and thereby arrive at the claimed invention.

10. Claims 1-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matyjaszewski et al. (U.S. 5,807,937) in view of either Pearlstine et al. (U.S. 6,087,416) or Kappele et al. (U.S. 6,063,834).

Matyjaszewski et al. disclose composition comprising block copolymer produced by ATRP wherein the block copolymer has the structure:

$$A\text{-}(M^1)_p\text{-}(M^2)_q\text{-}X$$

wherein A is residue from initiator where the initiators include alkyl halide and aralkyl halide, M^1 and M^2 are each obtained from monomers such as (meth)acrylic acid, (meth)acrylates, and acrylonitrile, and X is halide. It is disclosed that the block which comprise the copolymer are obtained from both polar and non-polar monomers. It is further disclosed that the X group is usually replaced with other functional group (col.6, lines 5-11, col.8, lines 18-20 and 47-53, col.14, lines 31-50, col.16, line 46-col.17, line 61, col.24, lines 62-67, col.26, line 66-col.27, line 1, col.27, lines 6-19, and col.39, lines 16-25).

The difference between Matyjaszewski et al. and the present claimed invention is the requirement in the claims that (a) the composition contains pigment, liquid carrier, binder, and other additives and (b) difference in the amount of functional groups between the two block of the copolymer.

With respect to difference (a), Matyjaszewski et al. disclose that the above described block copolymer is used in inks, but does not explicitly disclose components which are present in such inks.

However, it is well known that inks typically comprise liquid carrier, pigment, dispersant, binder, etc. Evidence to support this position is found in either Pearlstine et al. or Kappele et al.

Pearlstine et al. disclose ink that comprises 1-15% inorganic or organic pigment, 0.1-25% block copolymer dispersant, 11-16% binder, liquid carrier comprising water and solvent, and additives such as surfactant wherein the dispersant is used to disperse the pigment particles in the liquid carrier and then the pigment dispersion is combined with the other ingredients including binder (col.2, lines 15-32, col.3, lines 28-37 and 63-64, col.4, lines 12-18, and col.7, lines 1-36 and 38-42). Alternatively, Kappele et al. disclose ink comprising 2-50% binder, 0.2-15% pigment including inorganic and organic pigments such as anthraquinones, quinacridones, and carbon black, 0.5-7% block copolymer dispersant, solvent, and additives such as surfactant wherein the dispersant is used to disperse the pigment particles in the liquid carrier and then the pigment dispersion is combined with the other ingredients including binder (col.2, lines 11-13, col.4, lines 24-29 and 45-46, col.5, lines 50-51, col.6, lines 13-34, col.6, line 56-col.7, line 2, and col.7, line 7).

In light of the disclosure of Matyjaszewski et al. that the ATRP block copolymers are used in inks and given the disclosure of either Pearlstine et al. or Kappele et al. that inks typically contain pigment, dispersant, liquid carrier, binder, and additives as described, it therefore would have been obvious to one of ordinary skill in the art that ink composition of Matyjaszewski et al.

would intrinsically possess such ingredients, and thus, one of ordinary skill in the art would have arrived at the claimed invention.

With respect to difference (b), Matyjaszewski et al. disclose block copolymer prepared from monomers M^1 and M^2 which can each be (meth)acrylic acid, (meth)acrylates, acrylonitrile, etc. Thus, the two blocks obtained from these monomers will clearly possess different amounts of functional groups given that one monomers contains little if any functional groups, i.e. (meth)acrylate, while the other monomers necessarily possess certain amount of functional monomers, i.e. meth(acrylic).

Although there is no explicit disclosure of the amount of functional monomers in each block, given that the functional groups disclosed by Matyjaszewski et al., i.e. carboxyl groups, would effect the properties of the polymer such as water-solubility, it therefore would have been obvious to one of ordinary skill in the art to choose amounts of functional monomers present, including those presently claimed, in order to control the properties of the polymer, and thereby arrive at the claimed invention.

11. Claims 1-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pearlstine et al. (U.S. 6,087,416) or Kappele et al. (U.S. 6,063,834) either of which in view of Matyjaszewski et al. (U.S. 5,807,937)

Pearlstine et al. disclose ink that comprises 1-15% inorganic or organic pigment, 0.1-25% block copolymer dispersant, 11-16% binder, liquid carrier comprising water and solvent, and additives such as surfactant wherein the dispersant is used to disperse the pigment particles in the liquid carrier and then the pigment dispersion is combined with the other ingredients including

binder (col.2, lines 15-32, col.3, lines 28-37 and 63-64, col.4, lines 12-18, and col.7, lines 1-36 and 38-42).

Alternatively, Kappele et al. disclose ink comprising 2-50% binder, 0.2-15% pigment including inorganic and organic pigments such as anthraquinones, quinacridones, and carbon black, 0.5-7% block copolymer dispersant, solvent, and additives such as surfactant wherein the dispersant is used to disperse the pigment particles in the liquid carrier and then the pigment dispersion is combined with the other ingredients including binder (col.2, lines 11-13, col.4, lines 24-29 and 45-46, col.5, lines 50-51, col.6, lines 13-34, col.6, line 56-col.7, line 2, and col.7, line 7).

The difference between Pearlstine et al. or Kappele et al. and the present claimed invention is the requirement in the claims of specific type of block copolymer.

Matyjaszewski et al. disclose block copolymer produced by ATRP which has the structure:

$$A\text{-}(M^1)_p\text{-}(M^2)_q\text{-}X$$

wherein A is residue from initiator where the initiators include alkyl halide and aralkyl halide, M^1 and M^2 are each obtained from monomers such as (meth)acrylic acid, (meth)acrylates, and acrylonitrile, and X is halide. It is disclosed that the block which comprise the copolymer are obtained from both polar and non-polar monomers. It is further disclosed that the X group is usually replaced with other functional group. The block copolymers are suitable for use in inks

(col.6, lines 5-11, col.8, lines 18-20 and 47-53, col.14, lines 31-50, col.16, line 46-col.17, line 61, col.24, lines 62-67, col.26, line 66-col.27, line 1, col.27, lines 6-19, and col.39, lines 16-25).

Matyjaszewski et al. disclose block copolymer prepared from monomers M^1 and M^2 which can each be (meth)acrylic acid, (meth)acrylates, acrylonitrile, etc. Thus, the two blocks obtained from these monomers will clearly possess different amounts of functional groups given that one monomers contains little if any functional groups, i.e. (meth)acrylate, while the other monomers necessarily possess certain amount of functional monomers, i.e. meth(acrylic). Although there is no explicit disclosure of the amount of functional monomers in each block, given that the functional groups disclosed by Matyjaszewski et al., i.e. carboxyl groups, would effect the properties of the polymer such as water-solubility, it therefore would have been obvious to one of ordinary skill in the art to choose amounts of functional monomers present, including those presently claimed, in order to control the properties of the polymer.

The motivation for using such block copolymer is that the polymers exhibit low polydispersity and are well-defined and uniform (col.5, lines 57-64, col.38, lines 59-63, and col.39, lines 6-8).

In light of the motivation for using ATRP block copolymer disclosed by Matyjaszewski et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such block copolymer in the composition of either Pearlstine et al. or Kappele et al., and thereby arrive at the claimed invention.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

WO 99/0398, EP 218436, EP 329873, EP 518225, EP 323181, EP 962473, and Madeleine et al. (U.S. 4,925,765) each disclose block copolymer formed using group transfer polymerization, however, none of the references disclose initiator as presently claimed.

Olson et al. (U.S. 6,326,420) and White et al. (U.S. 6,462,125) each disclose pigment dispersion comprising ATRP block copolymer and pigment as presently claimed, however, given the effective filing date, these references cannot be used as prior art under any subsection of 35 USC 102.

WO 97/18247 disclose ATRP block copolymers identical to that presently claimed however, there is no disclosure of composition which comprises such copolymer and pigment.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho
Examiner
Art Unit 1714

11/22/02